

CLAIMS

What is claimed is:

1. A method for producing a foamed article, comprising the steps of:  
providing an epoxy formulation, said epoxy formulation comprising an epoxy resin, a blowing agent having a thermoplastic shell filled with a solvent core, and  
5 a thixotropic filler;  
providing an amine formulation, said amine formulation comprising an amine and a thixotropic filler; and  
combining said epoxy formulation and said amine formulation to form a reactive mixture and allowing said thermoplastic shell filled with a solvent core to soften  
10 from amine-epoxy exotherm and then expand due to gas pressure from said solvent core.
2. The method for producing a foamed article recited in claim 1, wherein said epoxy resin comprises from about 35% to about 99% by weight of said reactive mixture.
- 15 3. The method for producing a foamed article recited in claim 1, wherein said epoxy resin and said thixotropic filler are combined prior to adding said blowing agent.
4. The method for producing a foamed article recited in claim 3, further  
20 including the step of combining said blowing agent with an inert filler prior to combining said blowing agent with said epoxy resin and said thixotropic filler.
5. The method for producing a foamed article recited in claim 1, wherein said reactive mixture further includes an additive selected from the group consisting of  
25 carbon black, ceramic microspheres, polymer particles, rubber particles, ceramic particles, inert mineral particles and combinations thereof.
6. The method of producing a foamed article recited in claim 1, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle  
30 selected from the group consisting of a rail member, a frame member, a door assembly, a rocker, and a frame cross member.
7. The method of producing a foamed article recited in claim 1, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle

selected from the group consisting of a vehicle window frame, a vehicle deck lid, a lift gate, a vehicle pillar assembly, and a vehicle hatch.

8. The method of producing a foamed article recited in claim 1, wherein said  
5 reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle roof system, a roof bow, a roof rail, and a roof header.

9. The method of producing a foamed article recited in claim 1, wherein said  
10 reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a fender assembly, a bumper, and a front end structure.

10. A method for producing a foamed article, comprising the steps of:  
15 providing an epoxy resin;  
providing a thixotropic filler;  
providing a blowing agent having a thermoplastic shell filled with a solvent core;  
providing an amine formulation, said amine formulation comprising an  
20 amine and a thixotropic filler; and  
combining said epoxy formulation and said amine formulation to form a reactive mixture and allowing said thermoplastic shell filled with a solvent core to soften from amine-epoxy exotherm and then expand due to gas pressure from said solvent core.

25 11. The method for producing a foamed article recited in claim 10, wherein said epoxy resin comprises from about **35%** to about **99%** by weight of said reactive mixture.

12. The method for producing a foamed article recited in claim 10, wherein  
30 said epoxy resin and said thixotropic filler are combined prior to adding said blowing agent.

13. The method for producing a foamed article recited in claim 10, further  
including the step of combining said blowing agent with an inert filler prior to combining  
35 said blowing agent with said epoxy resin and said thixotropic filler.

14. The method for producing a foamed article recited in claim 10, wherein said reactive mixture further includes an additive selected from the group consisting of carbon black, ceramic microspheres, polymer particles, rubber particles, ceramic particles, inert mineral particles and combinations thereof.

15. The method for producing a foamed article recited in claim 10, further comprising the steps of placing the reactive mixture in the cavity of an automotive vehicle.

16. The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a rail member, a frame member, a door assembly, a rocker, and a frame cross member.

17. The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle window frame, a vehicle deck lid, a lift gate, a vehicle pillar assembly, and a vehicle hatch.

18. The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a vehicle roof system, a roof bow, a roof rail, and a roof header.

19. The method of producing a foamed article recited in claim 10, wherein said reactive mixture is adapted for application upon portions of an automotive vehicle selected from the group consisting of a fender assembly, a bumper, and a front end structure.